Spring 2015 $9.00 USD

Finer Points

SUPERABRASIVE INDUSTRY REVIEW

INTERTECH 2015 Registration Packet and Conference Details

THIS ISSUE

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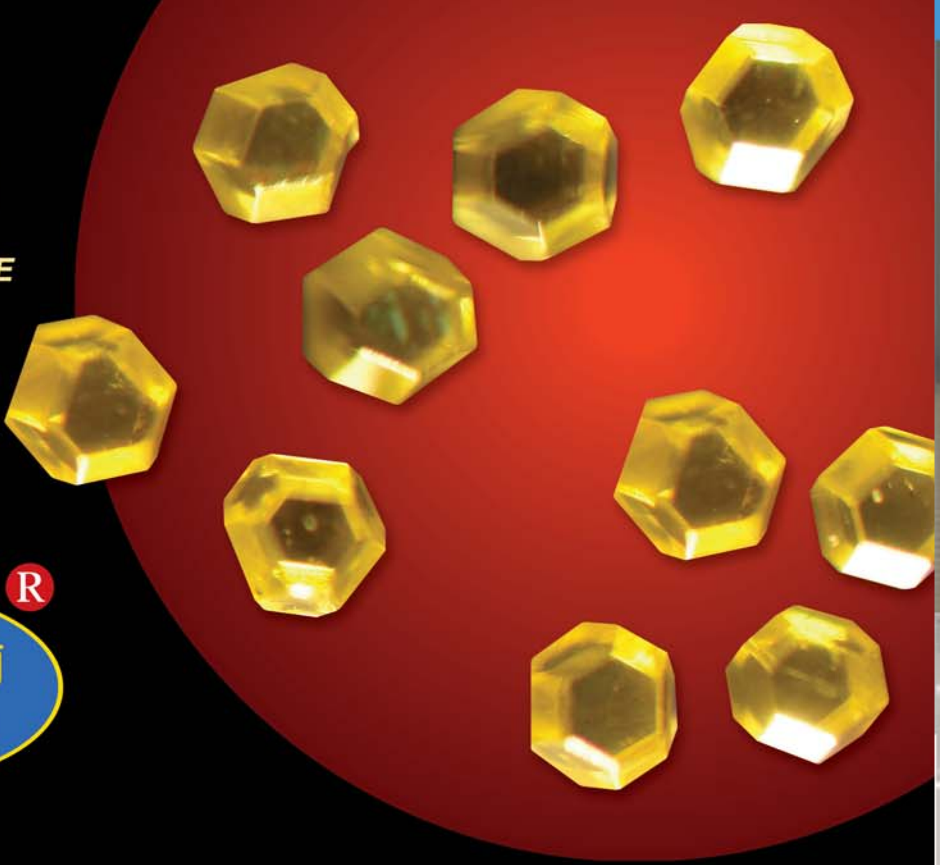

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COVER PHOTO

Indianapolis Artsgarden at night*. The Indianapolis Artsgarden is a glassed dome spanning the intersection of Washington and Illinois streets in downtown Indianapolis, Indiana. It serves not only as a pedestrian connector between the Circle Centre Mall and nearby buildings, but also as a venue for the display and performance of artistic and musical works. In addition, the Artsgarden houses the Cultural Concierge which provides ticket information, maps, and visitor guides for art events in Indianapolis. The structure, including the walkways connecting it to the adjacent buildings, is owned and operated by the Arts Council of Indianapolis.
Photo courtesy of Lavengood Photography

FINER POINTS is the longest running publication devoted exclusively to the understanding, selection and application of diamond, cubic boron nitride and related materials. It is edited for recipients who are involved in some way with these "superabrasives", either as providers of the materials, producers of products containing the materials or users of these products (e.g., grinding wheels, dressing tools, drill bits, saw blades, sawing wires, cutting tools, polishing compounds, CVD film products, etc.).

CORRECTIONS FROM WINTER 2014 FINER POINTS: 1) Please note contact information in Niabraze ad was incorrect. Please see new ad on page 27; and 2) In the Winter 2014 issue of Finer Points the website for Pinnacle Abrasives was listed incorrectly and should be www.pinnacleab.com.

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Worldwide Superabrasives, LLC .... IBC
Zhongnan Diamond Co., Ltd. .... IFC

A Finer Point of View…

The Spring Edition of Finer Points represents the opportunity to share some of my final thoughts on the industry and the work of the Industrial Diamond Association over the past year. At the IDA Annual Meeting last spring, we launched the year under the theme of "IDA – Viable Now and into the Future". The IDA was built over decades as the primary voice in the Superabrasive Industry that raised awareness regarding the properties and method of use for superabrasive materials. But now, with widespread use of superabrasive materials across most major industries, the theme could be phrased as a question. Is there still a purpose for the organization's mission to promote the use, application and development of superabrasive materials? Is there still good reason for companies to invest in membership? The answer to both questions is **yes!**

In the past year, the IDA has continued to deliver on the Strategic Plan the board of directors developed in 2012. The plan was built around the central mission of "promotion and education" as a means to grow the industry. In November, the IDA hosted its first "Superabrasive Materials, Principles and Applications" education program in Huntsville. A total of 58 participants from 27 companies attended learning and sharing with each other experience and practical knowledge on superabrasive tools and methods used for grinding, machining and polishing. The program was a success and the IDA plans to replicate the program in other manufacturing hotbeds around the US.

Finer Points is the primary method the IDA uses to communicate out to the marketplace. To augment this communication, the association continues to utilize technology to communicate with members and non-members alike. The IDA website has evolved with more information and a more user friendly appearance. The website's "member-only" section is periodically updated with relevant market, economic and industry data that is valuable information for members. Finally, establishing a presence on social media like LinkedIn™ and Facebook™ will enable a new forum for members and the marketplace to collaborate and communicate with each other.

PRESIDENT
Troy Heuermann

In May the IDA will be hosting the biennial INTERTECH Conference in Indianapolis, IN. The conference chose Indianapolis in order to access more potential attendees; especially professionals working in the Automotive Industry. Mindful of everyone's most precious resource – TIME, we chose to shorten INTERTECH from the historical 3 days conference to 2 days. By doing so, we were able to reduce the cost of the event as well. The intention of reducing the cost and time commitment was to make the conference more accessible to more people without reducing the quality event. Based on the abstracts and planned keynote speakers, we believe INTERTECH will be better than ever. With the investment of two days' time, attendees will have an even more focused opportunity to learn, share and network with the leading, global experts on superabrasives in the industry.

As member companies, we should all thank the Board of Directors for their passion and commitment over the past year. I personally thank them for their dedication. I've enjoyed working with this team building a strong association and strong friendships along the way. "IDA – Viable Now and into the Future?" Absolutely!

Sincerely,

Troy Heuermann
Industrial Diamond Association of America

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TERRY KANE, Editor

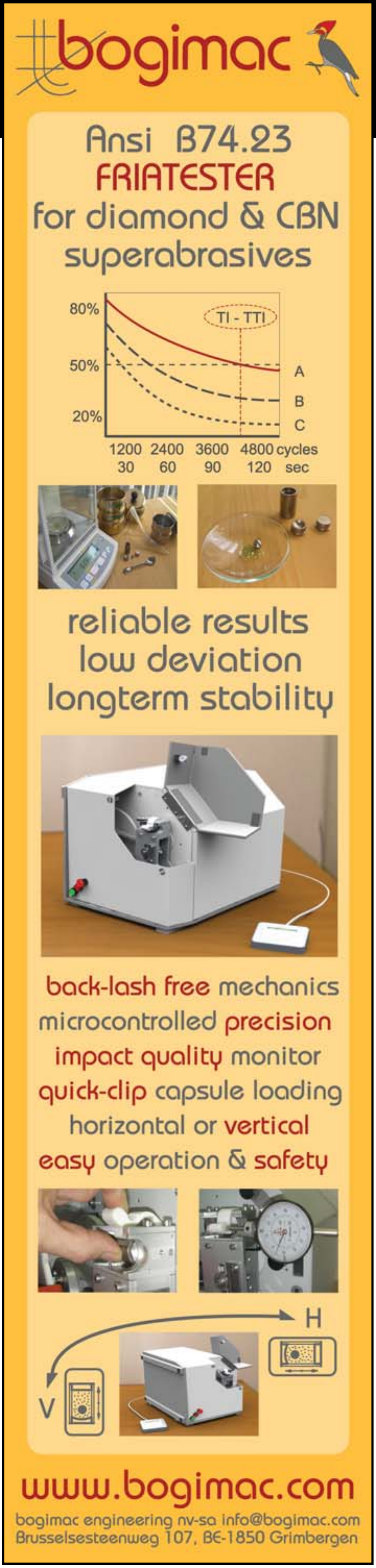
Crossover Technology – An Innovative Approach

For many years we have heard the term in our industry "Crossover Technology". To me this is very significant because in today's manufacturing operations there are new materials, new abrasives and new applications that fall outside normal expectations. We always hear that diamond works well only on non-ferrous materials and the diamond that needed to be applied had to be tailored for that application. Diamond has several limitations for mass industrial application on ferrous materials, including oxidation at temperatures above 800°C. So, it is not economical to use diamond in ferrous applications. Then there is the whole discussion of friability to match the materials being cut or ground. For instance a tough, less friable diamond is used in sawing and drilling of stone and concrete because the action required was to actually impact and shatter the material to cause the removal process to occur. On the other hand a more friable diamond was used in extremely hard materials like glass, ceramics or carbides because the removal process required a crystal that breaks down exposing numerous sharp cutting edges. In a like manner cubic boron nitride (cBN) was the superabrasive of choice for when grinding ferrous and hard to work materials like superalloys, hardened steel, stainless steel and such. We discovered years ago that cBN worked best in these high temperature ferrous applications because it did not break down like diamond. Cubic boron nitride is insoluble in iron, nickel, and related alloys at high temperatures, but it binds well with metals due to formation of interlayers of metal borides and nitrides. Because of its stability with heat and metals, cBN surpasses diamond in ferrous applications. The thermal conductivity of BN is among the highest of all electric insulators. It follows that Polycrystalline Diamond (PCD) and Polycrystalline Cubic Boron Nitride (PcBN) are also used in their respective material categories of non-ferrous and ferrous. Or so you would think! Recently, we have seen cBN being used successfully on electroplated wheels machining aluminum automotive parts, we have also seen diamond being used in wire saws for cutting steel rods and tubes or polycrystalline PCD band saws being used to cut and groove concrete relief slots. It all depends on speeds, feeds, temperatures generated and other parameters and raw material interaction. Each year I hear something new at INTERTECH based on abrasives and applications. We see new workpiece materials being introduced for aerospace and they are transitioning into the automotive and every other industry. Superalloys, composites and high silicon aluminum started in aerospace due to the need for lighter and stronger components. Now, lighter and stronger components are being required in other industries to obtain higher efficiency and performance and we see these materials crossing over for use in automotive, marine, wind turbines and medical. Superabrasives for new applications, new raw materials being used for components in manufacturing and new ideas being generated in every area across all industries, this is innovation at its best. Come see how INTERTECH 2015 showcases and generates discussion for new ***Crossover Technology!*** What will you find this year?

In Memoriam WILSON E. BORN

August 12, 1938 – January 18, 2015

Wilson Erwin Born passed peacefully, following a long battle with cancer, at Crittenton Hospital in Rochester Michigan on January 18th 2015 at the age of 76. He is survived by his wife of 28 years, Myrna. Wilson's father, Harry Born, founded National Research Company in 1950 and was an active member of IDA. Wilson graduated from Bowden College in 1960 with a Bachelor's Degree in Chemical Engineering where he chose diamond recovery as the subject for his thesis. Following graduation in 1960, Wilson joined National Research Company and subsequently purchased the company from his father in the early1970's. Wilson served for several years on the Board of Directors of the Industrial Diamond Association of America (IDA) and was elected President in 1986. He was also involved with many of the IDA committees and groups throughout the years and was made an Honorary Life member in 2012. Further, Wilson was active in several other trade associations and was a Life member of the American Chemical Engineers Society and The Detroit Economic Club. He was a member of ASM International and the Society of Manufacturing Engineers. Wilson encouraged his employees to participate in these trade associations and further supported the Canadian Diamond Drilling Association, National Drilling Association, Concrete Sawing and Drilling Association and Abrasive Engineers Society. Wilson enjoyed fishing and hunting and was an avid telegraph memorabilia and stamp collector. Wilson played Ice Hockey from a young age and was a member of Bowden's College Hockey team, as well as, a fan of the Detroit Red Wings and Montreal Canadians. It was Wilson's wish to ensure that National Research Company would continue to provide the Industrial Diamond Industry with the products and services that he had so carefully built over 50 years. On June 1, 2014; Wilson appointed Bill Fisher as President of National Research Company and made all necessary provisions for the company to continue uninterrupted under Bill's leadership. The employees of National Research Company are dedicated to honoring Wilson's legacy by providing the same great service and dedication to the industry.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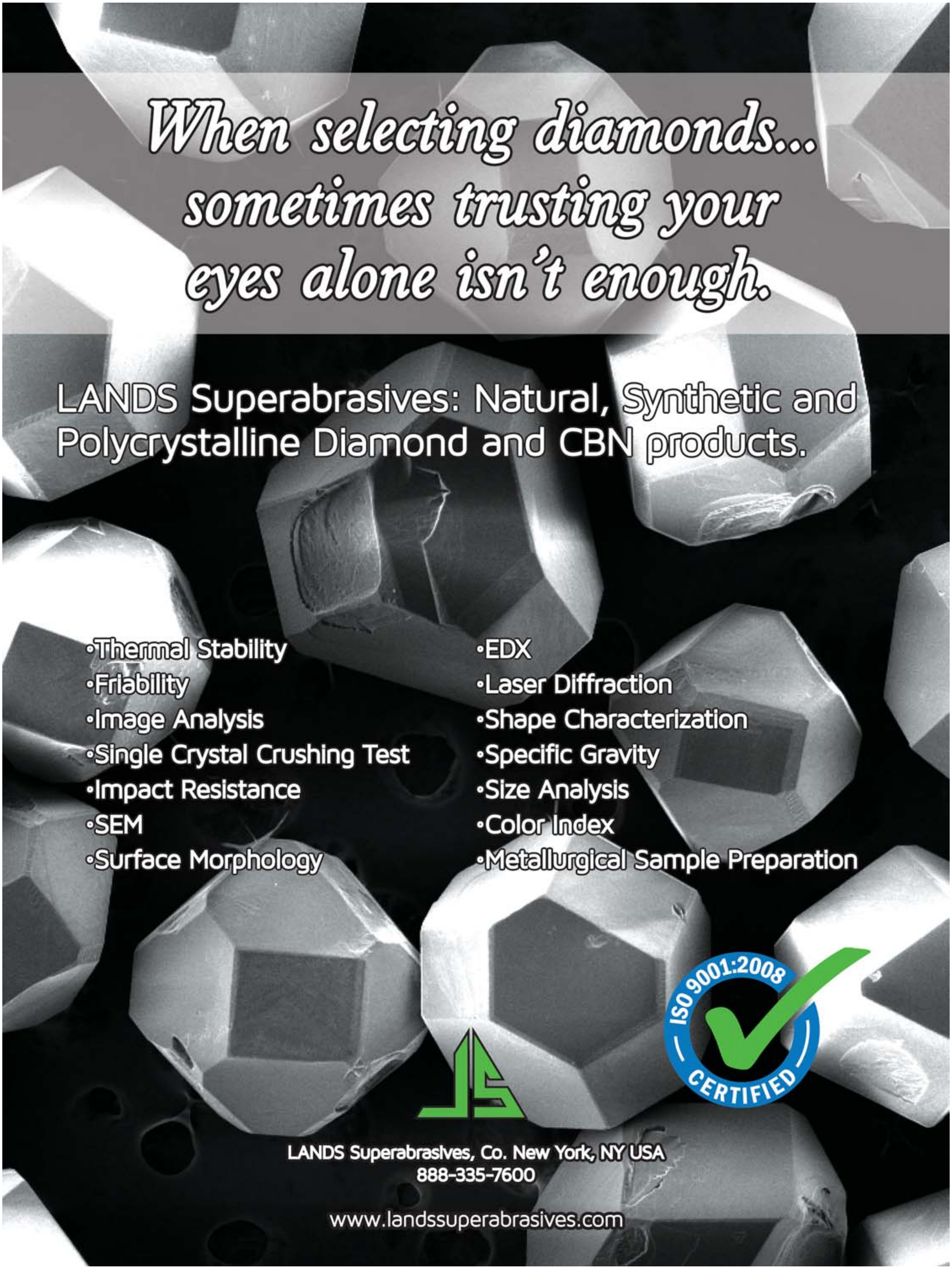

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INTERTECH 2015

An International Technical Conference on Diamond, Cubic Boron Nitride and their applications.

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Indianapolis Downtown Marriott
INDIANAPOLIS, INDIANA USA
May 19 & 20, 2015

WHAT IS INTERTECH 2015?

INTERTECH 2015 is the Biennial International Conference dedicated to technological advancement and application development with an emphasis on increased productivity and performance using industrial diamond, cubic boron nitride, CVD diamond, polycrystallines and related materials classified as superabrasives. **INTERTECH 2015** will feature superabrasive applications and developments specific to the automotive industry. The reason for this is the expanded use of new and difficult to machine and grind materials used in the manufacturing processes for automotive systems. These materials like superalloys, stainless steel, hardened steel, ceramics, high silica aluminum, composites and others are very light and strong but because of their composition are extremely difficult to work when manufacturing parts and components. In order to maintain productivity and process improvements, superabrasives need to be used in all manufacturing operations. The characteristics and properties of superabrasives allow for more precision, less scrap and no metallurgical damage on the finished parts. These results are extremely important in all industries, but critical in the automotive industry. This conference is designed to provide a blend of commercial and technical topics and serve as a global "meeting of the minds" for technologists and business leaders. Historically, **INTERTECH** has been the most successful conference held on superabrasives, drawing global audiences from commercial and scientific communities with myriad disciplines. **INTERTECH 2015** will continue with that prevailing mission to be the largest, most expansive conference ever conducted in this industry. **INTERTECH 2015** will have global leaders in Research, Superabrasive Synthesis, Manufacturing and Application Development of superabrasives in attendance. Discover and share the most significant product developments and new applications in superabrasive technology at **INTERTECH 2015**!

WHY ATTEND INTERTECH 2015?

Diamond, Cubic Boron Nitride (cBN), polycrystallines, CVD Diamond, known as “superabrasives” are making greater strides in most industries. Today, superabrasives or ultra-hard materials are not only serving as abrasives for material removal, but also acting as wear materials, heat sinks, knives, laser windows, heat shields for spacecraft, prosthetics, nanodiamond vehicles to carry disease fighting drugs and other groundbreaking applications. These superabrasives are making it possible to economically use workpiece materials such as superalloys, high tech ceramics, metal matrix composites, bimetals and many more in manufacturing processes. Especially in Automotive we have seen the need for development of lighter and stronger materials from engine blocks and brake rotors to transmission and structural materials. These materials are finding their way into other industries that must meet the requirements of lighter and stronger components for better performance over longer periods of time. Economics now demand lighter and more fuel efficient airplanes, cars and trucks across the entire transportation industry. Leading manufacturers and service providers have made a major commitment to take full advantage of the properties of diamond and other ultrahard materials in their processes and applications. New workpiece materials, groundbreaking uses and an increased demand for productivity have heralded the need for superabrasives in every application possible. Machine tools are now being designed to take full advantage of superabrasive cutting tools, wheels and blades and this is just the beginning. Application of superabrasives has grown from the first use of natural diamond to grind tungsten carbide in the early 1940's to a broad range of high production applications across many manufacturing and service industries. From grinding and machining of ceramics, bi-metals, metal matrix composites and high silicon aluminum in automotive operations to metalworking of superalloys, high tech ceramics hardened steel and composites in aerospace as well as the sawing or drilling of stone and concrete or new uses of nanodiamond and CVD diamond & cBN, literally every industry is seeing the benefits of diamond and other ultra-hard material properties. Industries have made great strides by increasing productivity, reducing manufacturing & operating costs and implementing new technology. Whether it's the processing of stone from huge quarries, drawing wire, providing laser windows, shaping wood and laminates, grinding glass, texturing the close tolerances for the discs in electronic hard drives, providing medical breakthroughs in prosthetics or nanotechnology, growing large single crystals or coating base materials with diamond film, superabrasives are industry's choice for myriad solutions and cost effective processes. Much of this explosive growth has occurred in the last three decades. It is vital for continued prosperity that every company and individual, working or doing business in this burgeoning industry, devotes more time and resources to user education and application development. **INTERTECH 2015** has the unique position of global sponsorship and participation, bringing together technical and commercial experts with research and academic scientists to discuss applications, technical innovations and industry trends that will shape the future. **INTERTECH 2015** will serve as an international forum for all participants to meet and focus on specific issues related to superabrasive use with common goals of increased productivity, new technological development and reducing overall business costs.

Photos of Indianapolis for INTERTECH 2015 courtesy of Indianapolis Convention & Tourism Bureau.

MISSION STATEMENT

"**INTERTECH** conferences will serve as an international forum on new technology for diamond, cubic boron nitride (cBN) and other related materials classified as superabrasive or ultra-hard materials. **INTERTECH** will educate attendees and disseminate research and application development information covering these materials. **INTERTECH** will host all global manufacturing, technical, research, academic, commercial and end user organizations to share scientific breakthroughs and innovations. **INTERTECH** will adhere to the mission of blending technical innovation, research and product development with the ultimate focus on end user application."

KEY CONFERENCE FEATURES

- Technical and application presentations from all areas of interest to evaluate growth opportunities of diamond, cBN and other ultra-hard materials with a focus on performance and productivity
- Conference will feature Automotive and other major manufacturing industries and their leading edge manufacturing material requirements
- Outstanding venue at the Marriott Downtown Indianapolis Indiana USA, a great location with excellent weather in May of 2015
- A unique occasion to interact with technical and business leaders, scientists, peers, suppliers, academia, manufacturers, tool fabricators, machine tool builders and end users within the structure of a Global Technical Conference
- Reception to meet other attendees, presenters and business leaders
- Opportunity to hear experts from diverse technologies and to personally interact with all presenters and attendees
- Tabletop displays and exhibitions from leading companies in the industry with time to discuss products and solutions
- Keynote speakers from major Automotive and Manufacturing companies
- Chance to evaluate emerging technologies and materials for your own application situations
- Two full days with a total of 12 concurrent sessions of technical and commercial papers
- An open evening where attendees can take full advantage of the splendid sights, entertainment, dining and tourist attractions of the magnificent city of Indianapolis
- Opportunity to meet with leaders from major research companies, suppliers, end users and peers for networking and discussion
- Two days of wonderful meals, camaraderie and conversation
- All papers considered for publication in Finer Points Magazine
- Complimentary Proceedings to all attendees ... And much more!

INTERTECH 2015 Administrative Details

NO SMOKING PLEASE

Smoking is prohibited in all meeting facilities.

CLIMATE FOR INDIANAPOLIS, INDIANA USA IN MAY

Normal Max/ High Temperature 23°C (74°F)
Average Temperature 17°C (63°F)
Min/ Low Temperature 11°C (52°F)
Normal Precipitation 102mm (4in)
Number of Wet Days (probability of rain on a day) 13 (42%)
Average Sunlight per day 08:44
Average Daylight per day 14:20
Sunny (Cloudy) Daylight Hours 62% (38%)
Sun altitude at solar noon on the 21st day 70.5°

Evenings in May are cool and could require a light jacket or sweater.

CONFERENCE DRESS

Recommended dress for the conference attendees is business casual. Gentlemen presenters are asked to wear a jacket and ladies suitable business attire. Rooms are air conditioned, so a sweater or a jacket is recommended.

SPECIAL ASSISTANCE

Prior to the meeting, please call or email IDA Headquarters (Tel: 614-797-2265, email: tkane-ida@insight.rr.com) if any special assistance is required for any attendee. On-site, guests requiring special assistance should contact a member of the **INTERTECH 2015** staff at the Conference Desk.

SESSION RECORDINGS & PHOTOGRAPHY

Due to proprietary information and as a courtesy to our speakers, no audio and video recording or photography (including cell phones) of the presentations may be made without the prior written permission of the Industrial Diamond Association of America (IDA). All **INTERTECH 2015** presentations are copyrighted to the Industrial Diamond Association of America and the IDA reserves the right to prohibit the recording of presentations or photography even if it is intended for personal use.

INTERTECH 2015* Event Snapshot

Indianapolis, Indiana USA ● May 19 & 20, 2015

TUESDAY, MAY 19

CONTINENTAL BREAKFAST 7:00-8:00 AM
REGISTRATION 8:00 AM-12 NOON

8:00-8:45 AM Keynote Speaker – DR. R. BYRON PIPES, ***Computation and Simulation Director National Composites Manufacturing Institute Purdue University***

MORNING

8:45 - 12 Noon AEROSPACE	8:45 - 12 Noon ADVANCEMENTS IN SUPERABRASIVE MATERIALS	8:45 - 12 Noon MATERIALS & PROCESSING
• Designs for Industry Applications • Machining & Grinding Exotic Materials	• Diamond & Cubic Boron Nitride Mesh • Polycrystalline • CVD Diamond & cBN • Nanodiamond	• Lasers • Thermal Sprays • Superalloys • Composites • Ceramics

12 NOON - 1:00 PM LUNCH

1:00 -1:45 PM Keynote Speaker – DR. ROBERT COOK, ***Senior Materials Engineer and Ceramic Matrix Composite Technical Lead at Lancer Systems***

AFTERNOON

1:45 - 4:45 PM RESEARCH & DEVELOPMENT	1:45 - 4:45 PM SUPERABRASIVE CHALLENGES FOR INDUSTRY	1:45 - 4:45 PM APPLICATION CASE HISTORIES FOR SUPERABRASIVES ON AUTOMOTIVE & AEROSPACE COMPONENTS
• Superfinishing • Fine Lapping • Double Disc Grinding • Other	• Machine Design • Grinding Wheel Development • Cutting Tool Advancements	• Repair/Refurbishing • Turbine Buckets • Engine Blocks • Landing Gear

EVENING

6:00 pm - 8:00 pm

WELCOME RECEPTION – Hors d'oeuvres & Cocktails

WEDNESDAY, MAY 20

CONTINENTAL BREAKFAST 7:00-8:00 AM
REGISTRATION 8:00 AM-12 NOON

8:00-8:45 AM Keynote Speaker – DR. JI-CHENG (JC) ZHAO, ***Program Director Advanced Research Projects Agency-Energy, Advanced Materials and High-Efficiency Energy Systems***

MORNING

8:45 - 12 Noon ACADEMIA & RESEARCH	8:45 - 12 Noon AUTOMOTIVE APPLICATIONS	8:45 - 12 Noon CONSTRUCTION, MINING, ENERGY, OPTICS, MEDICAL, WIRE & OTHER INDUSTRIES USING SUPERABRASIVES
• New Crystal Development • Polycrystalline cBN • Polycrystalline Diamond • CVD Diamond • Optics • Electronics • Medical	• Superabrasives • Gears • Honing • New Component Materials	• Prosthetics • Wear Parts • Sawing • Drilling

12 NOON - 1:00 PM LUNCH

8:00-8:45 AM Keynote Speaker – DAVID ANDERSON, ***Senior Director Technical Panel and Long Products Program Steel Market Development Institute (SMDI)***

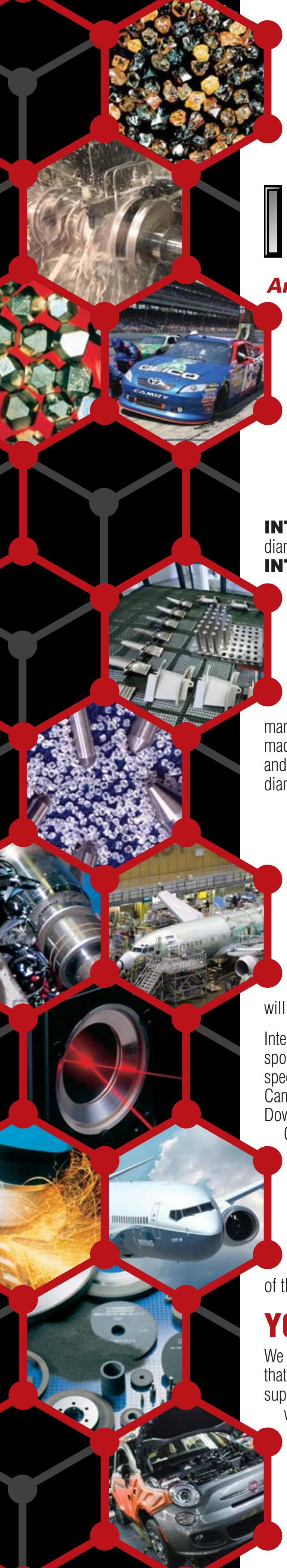
AFTERNOON

1:45 - 4:45 PM ELECTRONICS, MEDICAL AND OTHER INDUSTRIES USING SUPERABRASIVES	1:45 - 4:45 PM APPLICATION DEVELOPMENT	1:45 - 4:45 PM ENERGY, OPTICS, MEDICAL, WIRE AND OTHER INDUSTRIES USING SUPERABRASIVES
• Grinding • Machining • Drilling • Finishing • Machine Tools	• Superabrasive Grinding Polishing Edging • Diamond Windows Types & Application	• Wire Drawing • Polishing • Knives • Gears • Specialty Machine Tools

EVENING

OPEN EVENING

***PROGRAM SUBJECT TO CHANGE DEPENDING ON CONFIRMED SPEAKERS, SELECTED ABSTRACTS AND PAPERS**



The Industrial Diamond Association of America Announces INTERTECH 2015 May 19 & 20

INTERTECH 2015

An International Technical Conference on Diamond, Cubic Boron Nitride and their applications.

www.intertechconference.com

Indianapolis Downtown Marriott
INDIANAPOLIS, INDIANA USA
May 19 & 20, 2015

INTERTECH 2015 WILL BE THE FEATURED CONFERENCE FOR NEW TECHNOLOGY AND APPLICATION DEVELOPMENT OF SUPERABRASIVES AND SUPER-HARD MATERIALS

INTERTECH 2015 is the leading International Technical Conference on industrial diamond, cubic boron nitride, polycrystallines, CVD diamond, CVD Cubic Boron Nitride, Nanodiamond and other materials classified as superabrasives and ultra-hard materials.

INTERTECH 2015 will serve as a forum for leading experts representing international suppliers, manufacturers, research facilities, academia, end-users, machine tool builders and the scientific community. They will be presenting papers on subjects that will introduce new and thought-provoking technology on industrial and commercial levels. This will be an international "meeting of the minds" for every aspect of ultra-hard material science.

AUTOMOTIVE FEATURED INDUSTRY

With **INTERTECH 2015** being held in Indianapolis during May it follows that the automotive industry will be a featured industry. The automotive industry is a major user of superabrasives and implements new applications and innovations throughout their manufacturing operations using diamond and cubic boron nitride materials. The parts manufactured for automotive (including racing) are made from materials such as Metal Matrix Composites, High Silicon Aluminum, Ceramics, Bi-Metals, Glass and other difficult to machine and grind raw materials. These materials require the high productivity, close tolerances and superior performance attainable only by diamond and cBN tooling for machining, grinding and other material removal and finishing operations.

INDIANAPOLIS IS A MAJOR ATTRACTION…

Over 20 million people will arrive in Indianapolis next year. A few of these will attend **INTERTECH 2015**. In May, Indianapolis hosts the INDIANAPOLIS 500, heralded as The Greatest Spectacle in Racing. It is only appropriate that **INTERTECH**, the greatest spectacle in superabrasives, be held in the same month. **INTERTECH** has been held in many locations over the last 14 years and in 2015 this sensational event will be held in Indianapolis, Indiana USA. **INTERTECH** is known for excellent locations and exceptional service and **INTERTECH 2015** will carry on that tradition at the Indianapolis Marriott Downtown. We are anticipating the usual excellent attention and personal service that has become the standard of **INTERTECH** conferences. The Marriott boasts beautiful accommodations, revamped meeting rooms and luxurious amenities. The Marriott is conveniently located in the center of downtown Indianapolis surrounded by excellent restaurants, attractions and shops. **INTERTECH 2015** will be a rewarding technical experience complimented by this excellent venue.

Internationally famous, the Indianapolis Motor Speedway is home to the world's largest single-day sporting event, the Indianapolis 500. The track opened in 1909 and is the world's largest spectator facility. It is so large that you could fit the Roman Coliseum, Vatican City, Wimbledon Campus, Rose Bowl, Yankee Stadium and Churchill Downs inside the 2.5-mile oval. The Downtown Marriott is conveniently linked to Circle Centre, a four-level urban mall anchored by Carson Pirie Scott a downtown landmark. On the city's north side, The Fashion Mall at Keystone presents such options as Saks Fifth Avenue and Crate & Barrel. Smaller, uniquely local shops are found within the city's various Cultural Districts. Downtown has great restaurants, ranging from Shapiro's (one of America's greatest delis), to Goose The Market, one of the Top 10 U.S. sandwich shops, to St. Elmo Steak House, home of the hottest meal in the world. Other attractions include The Indianapolis Zoo (located in the nation's only urban cultural state park) is ranked among the nation's top 10 zoos and the Indianapolis Museum of Art – one of the country's 10 largest and oldest general art museums. All of this complements **INTERTECH 2015** to make it a "have to attend" conference!

YOU CAN BE A PART OF THIS EXCITING EVENT!

We are now soliciting commercial and technical papers of approximately 30-45 minutes in length that address the research of these super-hard materials as well as the dynamics and application of superabrasive systems in automotive and other industries as well (see: Areas of Consideration) with a focus on new technology, tooling, workpiece materials, machines and applications related to increased **PRODUCTIVITY** and **PERFORMANCE**. Consideration for papers is being made at this time and abstracts are now being accepted; contact us today to be considered. This will be the most comprehensive event ever held on super-hard materials for automotive and similar industries!

Photos of Indianapolis for INTERTECH 2015 courtesy of Indianapolis Convention & Tourism Bureau.

AREAS OF CONSIDERATION FOR PAPERS FEATURING PAPERS ON SUPERABRASIVES FOR AUTOMOTIVE

AUTOMOTIVE
- Parts Manufacturing
- Gears
- Wheels
- Transmissions
- Engines

MACHINE TOOLS
- Development
- Innovations
- Advancements
- Superabrasive

RESEARCH & DEVELOPMENT
- New Crystals & Abrasives
- New Coatings
- Bond Development
- Testing/Gauging
- Tool Fabrication
- Materials
- Tooling
- Application Development
- HPHT Technology
- Film (CVD & PVD)
- Magnetorheological Finishing
- Electrolytic In-process Dressing (ELID) Mirror-Surface Grinding
- Nanotechnology

TOOLING
- Grinding Wheels
- Cutting Tools
- Drill Bits

WEAR PARTS
- Rests
- Anvils
- Nozzles

WORKPIECE MATERIALS
- Metal Matrix Composites
- Bi-Metals
- High Tech Ceramics
- High Silica Aluminum
- Glass
- New Materials & Alloys
- Thermal Sprays
- Superalloys
- Nano-Structured Materials

OTHER NEW TECHNOLOGY & APPLICATION DEVELOPMENT

OTHER INDUSTRIES AND TOPICS FOR CONSIDERATION

AEROSPACE
- Manufacturing
- Rebuilding

CONSTRUCTION/HIGHWAY
- Concrete Aggregates & Variables
- Highway/Runway
  – Grinding & Grooving
  – Bridge Repair
- Renovation
- Block Grinding
- Polishing

ELECTRONICS
- Disc Texturing
- Wafer Mfg.
- Polishing
- Optic Windows
- Semiconductors
- Heat Sinks

EMERGING TECHNOLOGY
- CVD Diamond
- Nanodiamond
- New Crystals
- Coatings

GLASS
- Lens Generation
- Polishing
- Pencil Edging

MACHINE TOOLS
- Development
- Innovations
- Advancements
- Superabrasive Adaptation

MEDICAL
- Surgical Knives
- Prosthesis Fabrication

MINING/DRILLING/NATURAL RESOURCE EXPLORATION
- Drills & Bits
- Application

NANOTECHNOLOGY
- Medical Developments
- Industrial Applications
- Electronics
- Other Research & Developments

OTHER MANUFACTURING
- Pumps
- Motors
- Heavy Equipment

OPTICS
- Polishing
- Lens Generation
- Diamond Coating

RESEARCH & DEVELOPMENT
- New Crystals & Abrasives
- New Coatings
- Bond Development
- Testing/Gauging
- Tool Fabrication
- Materials
- Tooling
- Application Development
- HPHT Technology
- Film (CVD & PVD)
- Magnetorheological Finishing
- Electrolytic In-Process Dressing (ELID) Mirror-Surface Grinding
- Nanotechnology

STONE PROCESSING
- Quarrying
- Sawing
- Polishing

SUPPLIERS TO SUPERABRASIVE INDUSTRY
- Metals
- Coolants
- Measuring & Gauging
- Safety
- Pressing Equipment

TOOLING
- Grinding Wheels
- Cutting Tools
- Sawblades
- Drill Bits

WEAR PARTS
- Rests
- Anvils
- Nozzles

WIRE DRAWING
- New Technology
- Applications
- Application
- Single Crystal
- PCD
- Manufacturing

WOODWORKING
- Hard Woods
- Fiberboard
- Laminates
- Composites

WORKPIECE MATERIALS
- Metal Matrix Composites
- Bi-Metals
- High Tech Ceramics
- High Silica Aluminum
- Wood & Wood Composites
- Glass
- Stone
- Concrete
- New Materials & Alloys
- Thermal Sprays
- Superalloys
- Nano-Structured Materials

OTHER NEW TECHNOLOGY & APPLICATION DEVELOPMENT

WATCH FOR INTERTECH 2015 ON-LINE

As you can see by the areas for paper consideration, diamond and cubic boron nitride are not just being used as abrasives in traditional applications. Today, superabrasives and ultra-hard materials are making inroads in electronics, medical, cosmetics and literally every other industry where the characteristics of diamond and cubic boron nitride can affect performance or provide higher strength or new capabilities. As an **INTERTECH** attendee you will learn how these new products and applications are being developed, where super-hard materials are being used and how you can apply these systems in new and innovative ways. Visit the **INTERTECH 2015** website: www.intertechconference.com for additional information on:

● CONFERENCE REGISTRATION ● ABSTRACT SUBMISSION ● LOCATION & TRAVEL
● SESSIONS & SCHEDULES ● PAPER GUIDELINES ● VISAS & INVITATION LETTERS
● SPEAKERS & TOPICS ● TABLETOP DISPLAYS ● KEYNOTE ADDRESSES
● ORGANIZING COMMITTEE CONTACTS

On-Line submission of abstracts is now available at www.intertechconference.com. If you wish to present a paper, you can also send a one or two paragraph abstract of your paper topic via email, fax or regular post to: Terry M. Kane, Chairman • INTERTECH 2015 • P.O. Box 29460 • Columbus, Ohio 43229 • Telephone: 614-797-2265 • Fax: 614-797-2264 • e-mail: tkane-ida@insight.rr.com

ABSTRACTS ARE STILL BEING ACCEPTED

We will reply to all submissions. Come join us! **INTERTECH** has the tradition of being the most comprehensive event held on superabrasives and ultra-hard materials.

(PLEASE PRINT CLEARLY AND FILL OUT COMPLETELY. *INCLUDE ABSTRACT*)

Honorific (Mr, Mrs. Miss, Ms.): ____________________
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Company: ____________________
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Cell/MobilePhone: ____________________ Email: ____________________
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Paper Title: ____________________

Photos courtesy of Chrysler Manufacturing

Photos courtesy of Lockheed Martin, Sikorsky Hellicopter, Pratt & Whitney and Northrop Grumman

INTERTECH 2015 ORGANIZING COMMITTEES

Every **INTERTECH** we strive to improve all aspects of the conference. This year we not only will be offering our outstanding technical sessions, but we also have improved the features of the conference by structuring the program around superabrasive materials used in the automotive industry. To meet this challenge we have restructured the organizational committees for **INTERTECH**. This year the **INTERTECH** and the Industrial Diamond Association of America (IDA) are proud to introduce the three Committees that are ultimately responsible for putting together **INTERTECH 2015**. The three committees are the STEERING & PLANNING COMMITTEES and TECHNICAL ADVISORY COMMITTEE. These committees have been working together to produce the best combination of presentations and contributors to represent both the Technical and Practical Application sides of the superabrasive industry. The Steering & Planning Committees change each **INTERTECH** and consist of notable business leaders from across the industry. They have dedicated their time and efforts to see that **INTERTECH 2015** is a success on every level from the promotional materials, venue & speakers to the program, tabletop exhibits and daily events. Their efforts constitute years of planning and coordination to bring about this International Event.

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- **Keith Reckling,** NATIONAL RESEARCH CORPORATION – Cochairman
- **Matt Collier,** ELEMENT 6

INTERTECH 2015 TECHNICAL ADVISORY COMMITTEE

The **INTERTECH 2015** TECHNICAL ADVISORY COMMITTEE will provide the technical guidance and recommendations for the technical portion of **INTERTECH 2015**. They will also provide formal review of the submitted abstracts and papers to insure that the quality and content of each paper is relevant and representative of the technology for the superabrasives industry and guarantee each conference session will consist of the best research papers and state-of-the-art topics for our industry. The TECHNICAL ADVISORY COMMITTEE is a standing committee in itself to assist through-out the year to expand technical programs of the IDA and to make sure the content of technical information is legitimate, viable and valuable. Dr. Ion Benea will serve as the founding Chairman of this committee; future chair people to be voted on by committee. Anyone willing to serve has a position as long as they want it providing they follow IDA code of ethics as outlined in the IDA By-laws. The TECHNICAL ADVISORY COMMITTEE (as technical advisory body) will be made up of scientists and engineers well known in the world of superabrasives. The goal is to improve on the technical content of **INTERTECH** Conferences. Consequently, the IDA has reached out to industry, research and academia (universities) for help in forming this committee. The goal is for the Technical Advisory Committee to have a balanced composition between industry, research and academia.

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Website: www.austromex.com.mx

Action Superabrasive Products, Inc.
Website: www.actionsuper.com

Advanced Abrasives Corporation
Website: www.advancedabrasives.com

American Superabrasives Corp.
Website: www.diamonds-abrasive.com

Anco Industrial Diamond Corp.
Website: www.ancodiamond.com

Apogee Precision Parts
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Bogimac NV-SA
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Desmond-Stephen Mfg Co.
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Dev Industrial Corp.
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Dianamic Abrasive Products Inc.
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Element Six
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Eloquence Corporation
Website: www.corporationwiki.com/New-York/New-York/eloqence-corporation/36629788.aspx

Engis Corp.
Website: www.engis.com

FACT USA
Website: www.wmstrading.com
Website: www.factdiamond.com

Fives Landis Corp-Citco/Gardner
Website: www.fivesgroup.com

Fort Wayne Wire Die Inc.
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Greenlee Diamond Tool Co.
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Iljin USA, Inc.
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Industrial Diamond Laboratories Inc.
Website: www.industrialdiamondlabs.com

Industrial Diamond Trading Corporation
Website: N/A

K & Y Diamond Ltd
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Lach Diamond, Inc.
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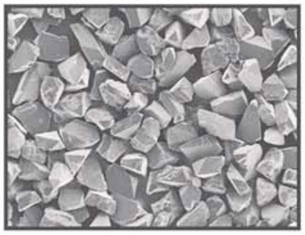

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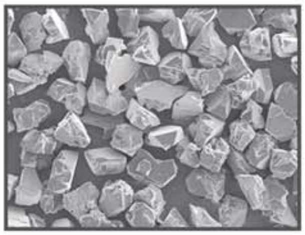

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INTERNATIONAL Companies and Countries of Attendees, Speakers, Authors and Organizations for INTERTECH 2015 Total of 152 Companies, Representing AMERICAS 68%, ASIA 22% and EUROPE 10%

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3M Abrasive Systems Division - USA
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ABC & Warren/Amplex Superabrasives - USA
Abrasive Technology - USA
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ANCA Pty Ltd - AUSTRALIA
Anco Diamond - USA
Anglo Sterling Ltd. - HONG KONG
Apogee Precision Parts - USA
Argonne National Laboratory - USA
Asahi Diamond America - USA
Automotive Technical Panel And Long Products
Program Steel Market Development Institute (SMDI) - USA
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Ingenieurbuero Dr. List - GERMANY

INTERTECH 2015 KEYNOTE SPEAKERS

DR. R.BYRON PIPES, NAE, IVA

Computation and Simulation Director National Composites Manufacturing Institute Purdue University John L. Bray Distinguished Professor of Engineering

R. Byron Pipes was appointed John L. Bray Distinguished Professor of Engineering at Purdue University in 2004. He is a member of the National Academy of Engineering (1987) and the Royal Society of Engineering Sciences of Sweden (1995). He served as Goodyear Endowed Professor of Polymer Engineering at the University of Akron during 2001-04. He was Distinguished Visiting Scholar at the College of William and Mary during 1999-2001, where he pursued research at the NASA Langley Research Center in the field of carbon nanotechnology. He served as President of Rensselaer Polytechnic Institute from 1993-98. Dr. Pipes was Provost and Vice President for Academic Affairs at the University of Delaware from 1991-93 and served as Dean of the College of Engineering and Director of the Center for Composite Materials during 1977-91 at the same institution. He was appointed Robert L. Spencer Professor of Engineering in 1986 in recognition of his outstanding scholarship in the field of polymer composite materials ranging over the subject areas of advanced manufacturing science, durability, design and characterization. He is the author of over onehundred archival publications including four books and has served on the editorial boards of four journals in his field. Dr Pipes has been recognized for his leadership in creating partnerships for university research with the private sector, government and academia. He served as one of the first six directors of National Engineering Research Centers of NSF. Dr Pipes received his doctoral degree in mechanical engineering from the University of Texas at Arlington and the MSE from Princeton University. He is the recipient of the Gustus L. Larson Award of Pi Tau Sigma and the Chaire Francqui, Distinguished Faculty Scholar Award in Belgium. He holds Fellow rank in ASC, ASME and SAMPE. Dr. Pipes has served on a number of National Research Council panels as both member and chair and served two terms on the National Materials Advisory Board. He is a registered professional engineer in the State of Delaware.

DR. ROBERT COOK

Senior Materials Engineer and Ceramic Matrix Composite Technical Lead at Lancer Systems

Dr. Cook obtained his Ph.D. from the University of Southern Mississippi specializing in the processing and characterization of high performance nanocomposites. He obtained his BS degree from Lycoming College, where he was a dual major in physics and astronomy, as well as a member of the varsity Track & Field team. Currently Robert serves as senior materials engineer and ceramic matrix composite technical lead at Lancer Systems in Quakertown, Pennsylvania. His primary focus has been the engineering, global business development and technical sales of application-specific CMCs for aerospace, defense and industrial applications. Robert's primary areas of expertise are the design and processing of polymer-derived CMCs consisting of either silicon oxycarbide, silicon carbide or silicon nitride matrices. These high-performance materials are commonly reinforced with either carbon, ceramic, alumina or quartz fibers, and can be filled with additional particulate material depending on desired composite bulk and surface property requirements. Due to their high thermal shock and impact resistance, Robert has had success implementing carbon-filled CMC solutions into critical refinery rotating equipment, where they have been shown to provide increased Mean Time Between Failure (MTBF) compared to monolithic OEM materials. Defined by their thermal insulation performance and thermal cycling resiliency, Lancer quartz and ceramic fiber filled CMCs are finding utilization in the defense industry as radomes and aerospace platform secondary structures, as well as thermal protection for data acquisition equipment used in the down-hole oil and gas and semiconductor industries.

INTERTECH 2015 IS PROUD TO PRESENT AN IMPRESSIVE PROGRAM OF KEYNOTE ADDRESSES FROM THE INDUSTRY'S LEADING TECHNOLOGISTS

DR. JI-CHENG (JC) ZHAO

Program Director at the Advanced Research Projects Agency-Energy (ARPA-E)

His focus at ARPA-E includes advanced materials and high-efficiency energy systems. In addition to his position at ARPA-E, Dr. Zhao is a Professor of Materials Science and Engineering at The Ohio State University where his research spans lightweight magnesium alloys for transportation, low-modulus biocompatible titanium alloys for biomedical prosthetic devices, high-temperature steels for advanced ultrasupercritical (AUSC) steam turbines, high-temperature alloys for jet engines, computational alloy design approaches, and high-throughput experimental methodologies for accelerated discovery/development of advanced materials. From 1995 to 2007 Zhao was a Senior Materials Scientist at GE Global Research where he performed research and innovation in several areas including high temperature alloys and coatings for power generation turbines and jet engines, hydrogen storage materials, and energy conversion and storage systems. Zhao was a co-inventor of 48 US patents with 16 more pending. One of the alloys he co-invented is now widely used in GE gas turbines and was cited in a 2012 National Research Council report as one of the two successful examples of ICME (Integrated Computational Materials Engineering) materials design.

Zhao obtained his B.S. and M.S. degrees from the Central South University (China) and his Ph.D. degree from Lehigh University, all in the field of Materials Science and Engineering. He is a fellow of ASM International and serves on the editorial boards or as an associate editor of five journals. Zhao was the 2001 winner of the prestigious Hull Award from GE Global Research and was cited "for his leadership skills in advancing innovative, state-of-the-art development methodologies that aim to decrease cycle time for materials discovery while increasing robustness of the work. He also was recognized for his expertise and leadership regarding the critical nature of coatings and high temperature materials, and for his enormous energy and perseverance in solving real business challenges."

DAVID ANDERSON

Senior Director Automotive Technical Panel and Long Products Program Steel Market Development Institute (SMDI)

Mr. Anderson is responsible for leveraging his expertise to support the SMDI Automotive Applications Council's (AAC) expansion into chassis and powertrain programs, as well as serving as the liaison between the AAC and its partner organizations. In addition, he is responsible for coordinating efforts to grow steel long products in the North American automotive / heavy equipment and construction / infrastructure markets. He joined SMDI in 1998 as manager of bar and rod applications. Anderson is on the board of directors for the Technologies Research Corp. (a division of National Center for Manufacturing Sciences), is a member of the Society of Automotive Engineers (SAE) Ferrous Committee and has authored technical papers published by SAE. He earned a Bachelor of Science degree in metallurgical engineering from Michigan Technological University in Houghton and a Master of Science degree in Metallurgical Engineering from the Illinois Institute of Technology in Chicago.

INTERNATIONAL Companies and Countries of Attendees, Speakers, Authors and Organizations for INTERTECH 2015 Total of 152 Companies, Representing AMERICAS 68%, ASIA 22% and EUROPE 10%

COMPANY – COUNTRY

Innovative Organics (Saint-Gobain Ceramic Materials) - USA
Integrated Diamond Technologies, LLC - USA
K & Y Diamond Ltd - CANADA
Lach Diamant, Jakob - GERMANY
Lach Diamond, Inc. - USA
Lancer Systems - USA
Lands Superabrasives - USA
Lieber & Solow Co. - USA
Lunzer Technologies, Inc - USA
Mapal Inc. - USA
Megadiamond Inc. - USA
Microdiamant USA, Inc. - USA
Microwave Enterprises, Ltd - USA
Mitsubishi Materials Corporation - JAPAN
Morgan Advanced Materials And Technology - CHINA
MWI Eloquence - USA
N H Diamond Powder Co. - USA
Nan Jing Ziyuguanlan Chemical Material Co., Ltd. - CHINA
Nanomech - USA
National Composites Manufacturing Institute Purdue University - USA
National Research Company - AUSTRALIA
National Research Company - USA
Naval Research Laboratory - USA
Niabraze Corporation - USA
Nippon Institute of Technology - JAPAN
Noritake Co Inc. - USA
OGI Tech Inc - USA
Pinnacle Abrasives - USA
Precision eforming - USA
Premier Diamond Corp - BELGIUM
Protech Diamond Tool Inc. - CANADA
Radiac Abrasives, A Tyrolit Company - USA
Saint Gobain Abrasives - FRANCE
Saint Gobain Abrasives - USA
Saint-Gobain ABC/Warren/Amplex - USA
Sandvik Hyperion - USA
Sao Paulo State University - BRAZIL
Sawnode Technologie - CANADA
Scio Diamond Technology Corporation - USA
Shi Jiazhuang Xinhengtai Grinding Wheels, Co., Ltd. - CHINA
Sippr Engineering Group Co., Ltd. - CHINA
Smithsonian National Museum of Natural History - USA
Sp3 Cutting Tools Inc. - USA
Spec Tool - USA
Standard Die & Fabricating Inc. - USA
Stone Sole Associates LLC - USA
Sumitomo Electric Carbide Inc. Diamond Group - USA
Sumitomo Electric Hardmetal Corp. - JAPAN
Sunnen Products Company - USA
Superabrasives Inc. - USA
Synova S.A. - SWITZERLAND
Syntech Abrasives Inc. - USA
Techmetals, Inc. - USA
The Grinding Doc - USA
The University of New South Wales - AUSTRALIA
Tomei Corp. Of America - USA
Tyrolit LLC - USA
Ulbrich Stainless Steels & Special Metals, Inc. - USA
Union Industrial Abrasives - USA
University Of Chicago - USA
University of Nevada - USA
University of Toledo - USA
US Synthetic Corporation - USA
V.Bakul Institute Of Superhard Materials National Academy - UKRAINE
Vollmer Of America Corp. - USA
Wemex Superabrasivos, S. De R.L. De C.V. - MEXICO
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Worldwide Solids, LLC - USA
Worldwide Superabrasives, LLC - USA
YG1 USA - USA
Zhecheng Hongxiang Superhard Material Co., Ltd. - CHINA
Industrial Diamond Association of China - CHINA
Zhengzhou Research Institute for Abrasives and Grinding - CHINA
Zhengzhou Zhongnan Jete Superabrasives Co., Ltd. - CHINA
Zhengzhou ZZDM Superabrasives Co., Ltd. - CHINA
Zhongnan Diamond Co., Ltd - USA

The following PAPERS, AUTHORS and COMPANIES are the initial submissions under consideration for final presentation for INDICATED TECHNICAL SESSIONS at INTERTECH 2015

MATERIALS & PROCESSING

PAPER TITLE: "WETTER IS BETTER" WET LASERS WITH 5 AXES NOW SHAPE DIAMOND TOOLS
PRESENTER: **Peter Heath Ph.D.**, Industrial Diamond Specialist
Synova S.A., Switzerland

PAPER TITLE: 5 AXIS GREEN LASER SAWING AND SHAPING SYSTEMS FOR HARD MATERIALS AND ACCESSORIES
PRESENTER: Ben Hakman, Vice President
OGI Tech Inc., USA

PAPER TITLE: STATUS AND NEEDS OF AWJ MACHINING OF CERAMICS AND CMCS
PRESENTER: **Mohamed Hashish, Ph.D.**, Senior Technology Fellow
Flow International Corporation, USA

PAPER TITLE: SCIENCE OF POLISHED CONCRETE: ABRASIVE PROCESSES AND CHARACTERIZATION OF AESTHETIC SURFACES
PRESENTER: **James McArdle, Ph.D.**, Principal
Stone Sole Associates LLC, USA

PAPER TITLE: DEVELOPMENT OF GRINDING TECHNOLOGY OF MONOCRYSTALLINE SILICON CARBIDE BY APPLYING NANOPARTICLE DIAMOND GRINDING WHEELS
PRESENTER: **Tomohiro Ishizu**, Manager
A.L.M.T. Diamond Corp., JAPAN

PAPER TITLE: REAL-TIME MONITORING OF THE THIN DIAMOND WIRE MANUFACTURING PROCESS
PRESENTER: **Einar List**, PhD, Engineer
Ingenieurbuero Dr. List, Germany

PAPER TITLE: NANOSECOND LASER PROCESSING OF DIAMOND MATERIALS
PRESENTER: **Jan-Patrick Hermani**, Engineer
Fraunhofer IPT, Germany

PAPER TITLE: INFLUENCE OF MICROSTRUCTURE OF STEEL ON PCBN TOOL WEAR IN HARD TURNING
PRESENTER: **Santonu Ghosh Ph.D.**, Senior Research Scientist
Element Six Ltd • United Kingdom

AEROSPACE

PAPER TITLE: GRINDING OF Î3TIAL WITH SUPERABRASIVES
Coauthors: Biro R, Bright M, Graham D, Hitchiner M, Varghese P
PRESENTER: **Mike Hitchiner, Ph.D.**, OEM Technology Mgr.
Saint Gobain Abrasives, USA

PAPER TITLE: SINGLE CRYSTAL CUBIC BORON NITRIDE WITH HIGH THERMAL STABILITY AND MICROFRACTURE PROPERTY, HAS ENHANCED WEAR RESISTANCE AND IMPROVED EXCELLENT GRINDING PERFORMANCE
PRESENTER: **Kark Yeon Jo**, Director
ILJIN Diamond co. Ltd., South Korea

PAPER TITLE: EFFECT OF CVD DIAMOND THICKNESS ON DRILLING TOOLS PERFORMANCE IN AEROSPACE STACKS
Coauthors: Dr. Abdelatif Atarsia*; Rene Kristensen & Paul Abbott
PRESENTER: **Abdelatif Atarsia**, Aerospace & Composites Manager • *MAPAL Inc, USA*

PAPER TITLE: DEVELOPMENT OF ULTRA-FINE DIAMOND PCD FOR MACHINING AL ALLOYS
PRESENTER: **Youl-zhoo Sung**, Manager
ILJIN Diamond co. Ltd., South Korea

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RESEARCH & DEVELOPMENT

PAPER TITLE: HIGH PRESSURE DEFORMATION STUDY OF SINTERED DIAMONDS USING SYNCHROTRON X-RAY DIFFRACTION
PRESENTER: **Julien Gasc, Ph.D.**, Post-doc
GSECARS University of Chicago, Argonne National Lab, USA

PAPER TITLE: IMPLEMENTATION OF THE FRIATESTER COMMINUTION TEST METHOD AT THE TOOLMAKERS WORKSHOP
PRESENTER: **Philippe van Bogaert**, CEO
Bogimac NV-SA, Belgium

PAPER TITLE: MODERN TECHNIQUES TO EVALUATE RESIDUAL STRESSES FOR PROCESS CONTROL.
PRESENTER: **Jonathan Mohan**, X-Ray Engineering, Service & Sales
American Stress Technologies Inc., USA

PAPER TITLE: ENGINEERED GEOMETRIES FOR PDC CUTTERS EXTENDS THE LIFE AND PERFORMANCE OF PDC DRILL BITS
PRESENTER: **Dan Scott**, Senior Technical Advisor
Baker Hughes, USA

AUTOMOTIVE

PAPER TITLE: GRAIN OPTIMISATION OF CBN IN VITRIFIED BOND GRINDING WHEELS: MODELING THE EFFECT OF CBN GRAIN PROPERTIES ON WHEEL PERFORMANCE
PRESENTER: **Mark Munday Ph.D.**, Senior Research Fellow
Element Six Global Innovation Centre, UK

PAPER TITLE: DEVELOPMENT OF COATED CBN TOOLS FOR HARD TURNING
PRESENTER: **Tomohiro Fukaya**, General Manager
Sumitomo Electric Hardmetal Corp., Japan

PAPER TITLE: CUBIC BORON NITRIDE (CBN) SINTERED COMPACT WITH HIGH TOUGHNESS FOR CUTTING TOOLS OF HARDENED STEEL WAS DEVELOPED.
PRESENTER: **Shiro Oguchi**
Mitsubishi Materials Corporation, Japan

PAPER TITLE: HIGH PERFORMANCE MACHINING OF BRAKE DISCS WITH PCBN CUTTING MATERIALS AND CUSTOMIZED TOOLING
PRESENTER: **Johannes Schneider**, Manager Strategic Marketing
CeramTec GmbH; SPK Cutting Tool Division, Germany

PAPER TITLE: ADVANCED PROCESSES FOR THE PRECISION BORE FINISHING OF HYDRAULIC COMPONENTS
PRESENTER: **Robert Marvin**, Product Manager, Bore Finishing Systems
Engis Corporation, USA

PAPER TITLE: THE EFFECT OF DIAMOND POWDER CHARACTERISTICS ON POLISHING OF SINTERED SILICON CARBIDE
PRESENTER: **Hyprez Manager**
Engis Corporation, USA

PAPER TITLE: TRIMMING AND SLOTTING OF CARBON FIBER REINFORCED POLYMER (CFRP) WITH PCD END MILLS
PRESENTER: **Matthew Lay**, Research Engineer
Element Six Global Innovation Centre
United Kingdom

APPLICATION DEVELOPMENT

PAPER TITLE: CONTROL SYSTEM IN AN SPARK EROSION MACHINE FOR PCD TOOL MANUFACTURING
PRESENTER: **Kotler Tee**, System Engineer
ANCA Pty Ltd, Australia

PAPER TITLE: HIGH SPEED BALL NOSE END MILLING WITH PCBN
PRESENTER: **Anshul Singh**, Technology Manager
Sandvik Hyperion, USA

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PAPER TITLE: DRESSING OF AL2O3 WITH CVD, MCD AND NATURAL DIAMOND IN DRESSING AL2O3 – WEAR RATES, ANISOTROPY, DIAMOND GRADING, CERAMIC ABRASIVE AND TEMPERATURE EFFECTS
Coauthors: Jeffrey Badger, The Grinding Doc, New York, NY USA; Stuart Murphy, Garret O'Donnell, Trinity College, Dublin, Ireland; Sean Kitson, Element Six, Shannon, Ireland
PRESENTER: Jeffrey A. Badger, Ph.D.
The Grinding Doc Expert in Grinding, USA

PAPER TITLE: DIAMOND WIRE SAWING LARGE METAL COMPONENTS ... LOOKING FOR BETTER SUPERABRASIVES
PRESENTER: Timothy Beckman, CEO, President, Owner
Cutting Edge Services Corporation, USA

SUPERABRASIVE TECHNOLOGY

PAPER TITLE: EFFECT OF SILICON ADDITION ON DRAWABILITY OF NIOBIUM SHEET IN MANUFACTURING OF SYNTHETIC DIAMONDS
PRESENTER: A**bhishek Bhattacharyya, Ph.D.**, Engineer
H.C. Starck, USA

PAPER TITLE: INFLUENCE OF PHASE AND STRESS DISTRIBUTION ON THE WEAR PROPERTIES OF THERMALLY STABLE DIAMOND COMPOSITES
PRESENTER: James Boland, Ph.D., Honorary Research Fellow
CSIRO Energy Flagship, Australia

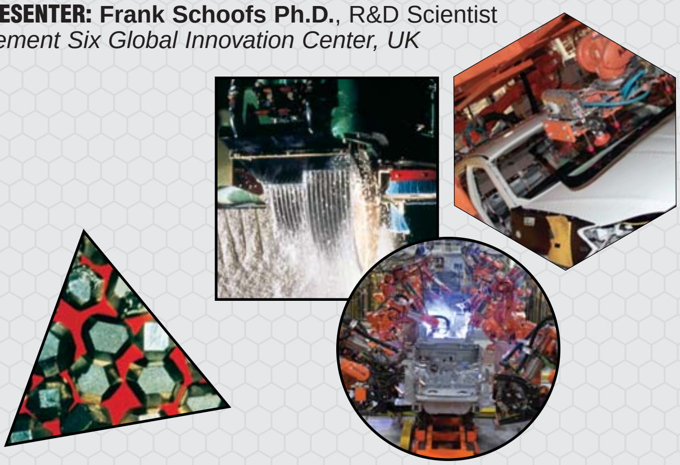
PAPER TITLE: DEVELOPMENT OF NANO-POLYCRYSTALLINE DIAMOND TOOLS FOR DIRECT CUTTING OF CEMENTED CARBIDE
PRESENTER: Fukaya Tomohiro, General Manager
Sumitomo Electric Hardmetal Corp., Japan

PAPER TITLE: US ANTIDUMPING LAWS AND REMEDIES FOR US MANUFACTURERS
PRESENTER: Daniel Pickard, Partner
Wiley Rein LLP, USA

PAPER TITLE: FABRICATION AND EVALUATION OF BRAZED MICRO POWDER DIAMOND MILL-GRINDING TOOL
Coauthors: Jianyun Shen, Jiangquan Wang, Yunjian Cui, and Xipeng Xu College of Mechanical Engineering & Automation, Huaqiao University, Xiamen 361021, China
PRESENTER: Jianyun Shen Ph.D. Professor
College of Mechanical Engineering & Automation, Huaqiao University, China

PAPER TITLE: DEVELOPMENT OF ABRASIVE SUPERHARD COMPOSITE MATERIALS BASED ON DIAMOND AND CUBIC BORON NITRIDE STRUCTURED BY CARBON BINDER AT SUBATMOSPHERIC PRESSURES INTENDED FOR GRINDING AND POLISHING TOOLS AND PASTES
PRESENTER: Poltoratskyi Volodymyr, Research Manager
V. Bakul Institute of Superhard Materials National Academy, Ukraine

PAPER TITLE: PERFORMANCE OF SINGLE CRYSTAL DIAMOND TOOLS IN METAL MATRIX COMPOSITE MACHINING
PRESENTER: Frank Schoofs Ph.D., R&D Scientist
Element Six Global Innovation Center, UK



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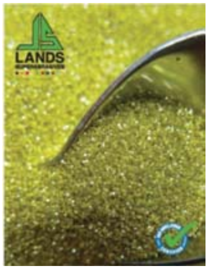
NEWS &notes



LANDS SUPERABRASIVES, CO. IN NEW YORK, NY USA HAS BEEN AWARDED ISO 9001:2008 CERTIFICATION AS PER JAN 20TH 2015

ISO 9001:2008 is the current internationally recognized version of the quality management system standard issued to date in 180 countries. To achieve this certification, LANDS Superabrasives embarked on a vigorous assessment process that included development of a quality management system, a full documentation review, a series of internal as well as external audits and clearance of non-conformances, all of which work in identifying and implementing corrective actions to support a Quality Management System. LANDS Superabrasives' long established policies, wide-ranging quality controls, design & development processes and thorough record keeping have helped in the building of this program. Since 1981 LANDS Superabrasives' motto has been and will be for years to come: LANDS Superabrasives, Consistent Quality. The decision to become ISO 9001:2008 certified is essential to their efforts to successfully compete in the global superabrasives market. Achieving this ISO certification shows LANDS Superabrasives' commitment to supply customers with a quality product.

WORLDWIDE SUPERABRASIVES AND SPOC HAS CONTINUED ITS COMMITMENT AND PASSION FOR QUALITY CONTROL, UTILIZING STATE OF THE ART RESIDUAL STRESS MEASUREMENT CAPABILITIES WITH THE ACQUISITION OF A LEADING RESIDUAL STRESS MAPPING MACHINE - THE PROTO LXRD

Measuring residual stress after grinding tests allows accurate assessment of wheel and process performance – a key factor in manufacturing superior parts. Visual assessment of a part cannot determine whether a part has sustained induced stress or burn, both of which can affect part performance. Knowing the type of residual stress that remains on a part is highly important in the manufacture of high quality automotive, aerospace and power generating equipment. By utilizing the Proto LXRD we can maintain the highest standards of quality control by closely analyzing samples that we grind for residual stress. Through utilization of enhanced quality control instruments such as the Proto LXRD, Worldwide Superabrasives can further its commitment to excellent testing standards. We are proud to be an innovator in implementing the strictest and most advanced quality control measures to reassure our customers of our integrity and to ensure superior testing every time.

CSDA WINS BIG IN LAS VEGAS – *THE CONCRETE SAWING AND DRILLING ASSOCIATION (CSDA) RECENTLY HAD A SERIES OF SUCCESSES DURING A HIGH-PROFILE TRADE SHOW AND EXHIBITION, EXCEEDING EXPECTATIONS*

St. Petersburg, FL – While attendance for this year's World of Concrete (WOC) reached almost 56,000, a 15% increase from 2014, CSDA also had increased participation for one of its three show-based training classes. The association's Estimating class had 25 students—up from 18 the previous year. Launched in 2003, Estimating covers the function of an estimator in the concrete cutting industry and has graduated 235 students to date. A 39-year cosponsor association of WOC, CSDA exhibited in Central Hall of the Las Vegas Convention Center and had more interest in its industry programs and resources than in recent years. As a result, several companies made the decision to join CSDA during or shortly after the show, which was more than the previous two years combined. Meanwhile, existing manufacturer, distributor and affiliate members filled close to 40 booths—up from last year—as the show's exhibit space covered more than 675,000 net square feet. For more information about CSDA, visit www.csda.org, email info@csda.org

ELEMENT SIX – *A WORLD LEADER IN SYNTHETIC DIAMOND SUPERMATERIALS AND MEMBER OF THE DE BEERS GROUP OF COMPANIES ANNOUNCED IT HAS WON A 2015 CS INDUSTRY AWARD*

Santa Clara, CA on March 16, 2015 – Element Six won the award for its Gallium Nitride (GaN)-on-Diamond semiconductor wafer technology. Offering high-power radio frequency (RF) and high-voltage power device manufacturers unmatched thermal conductivity, the company's GaN-on-Diamond technology has been proven to exhibit a clear advantage over other substrate materials. The breakthrough wafer technology provides a cost-effective and efficient thermal management solution for GaN RF semiconductor devices. The peer-voted awards program hosted by Compound Semiconductor honors those achievements that drive the compound semiconductor industry forward.

INTERTECH 2015 VENUE

http://www.indymarriott.com

In the continuing effort to maintain a venue of interest and attraction for attendees, INTERTECH 2015 is scheduled for Tuesday May 19 and Wednesday May 20, 2015 at The INDIANAPOLIS DOWNTOWN MARRIOTT, INDIANAPOLIS, INDIANA USA
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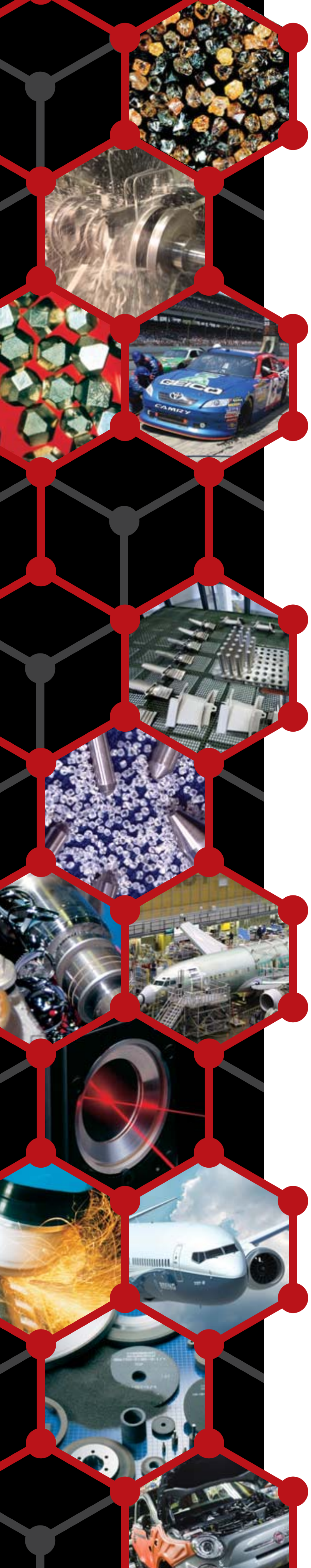

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FEES - INCLUDES ACCESS TO ALL SESSIONS, EXHIBIT AREAS, MEALS, WELCOME RECEPTION AND ELECTRONIC CONFERENCE PROCEEDINGS

Full Conference	**– $1075 USD**
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☐ **STUDENT**, Registered full time towards a degree. Must be accompanied by a signed letter from Department head verifying status – $745 USD

☐ **GUEST of a registered attendee wishing to attend *just* the Monday's Welcome Reception on May 19, 2015 – $125 USD.** Number of Guest Reservations _______

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TABLETOP RESERVATION FORM

Another special feature of the **INTERTECH 2015** technical conference will be the inclusion of Technical/Product tabletop displays by participating companies. There will be a LIMITED number of spaces around the conference foyer and break area made available to companies that wish to exhibit.

Due to the limited space, reservations can only be guaranteed when the completed form and payment are received at IDA Headquarters or completed on-line. Additional companies seeking space will be put on a waiting list as received.

These spaces fill up early so make your reservation as soon as possible!

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FEE SCHEDULE

The fee for each tabletop space is $995.00 USD.

WHAT IS INCLUDED?

Exhibit space reservation fee will cover a single (6'x 2.5') draped table for placement of materials or exhibits. Any additional requirements for electricity, Internet connections, setup or drayage must be contracted with hotel services.

EXHIBIT PARAMETERS

Each display must be limited to the confines of the (6'x 2.5') tabletop with a **5 foot maximum height off the table** (ceiling height is only 8 feet). Large exhibits that stand on the floor are not allowed. No display may have loud music, audio or lighting that interferes with normal conversation, or is deemed problematic by conference management. No exhibit may have any flammable or hazardous materials, operating machinery or heavy equipment. Please direct any specific questions or concerns to IDA Headquarters – Telephone 614-797-2265, Email: tkane-ida@insight.rr.com.

Please indicate your selections:

____ YES, I want to reserve a tabletop for my company's exhibit materials.

TOTAL AMOUNT ENCLOSED: $____________

METHOD OF PAYMENT

Indicate the method of payment and fill in the credit card information, if applicable.

____ Wire Payment – email IDA tkane-ida@insight.rr.com for banking information

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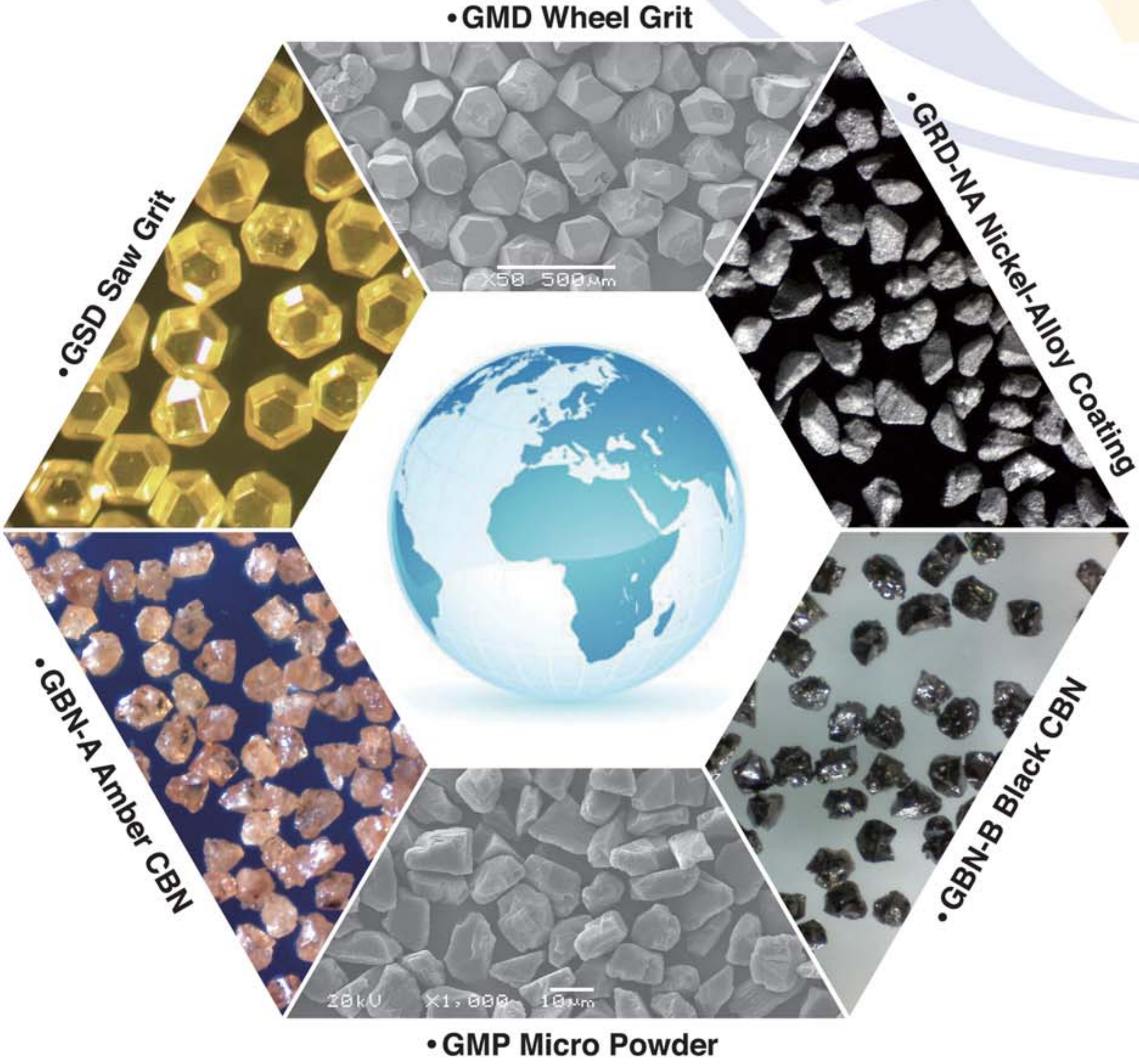

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Calendar of EVENTS

To have your event or conference listed, please send information to: Finer Points Event Calendar • P.O. Box 29460, Columbus OH 43229 • Fax 614-797-2264 or email: tkane-ida@insight.rr.com

APRIL 20-23, 2015
AERODEF Manufacturing
Hilton Anatole • Dallas, TX
Exhibits April 21-22

APRIL 27-30, 2015
Interwire 2015
Georgia World Congress Center
Atlanta GA, USA
Interwire is the largest wire and cable manufacturing trade show in the Americas

APRIL 21-23, 2015
Precision Machining Technology Show (PMTS) 2015
Greater Columbus Convention Center
Columbus, OH • http://www.pmts.com

MAY 4-7, 2015
2015 Offshore Technology Conference
NRG Park
Houston, Texas, USA

MAY 11–14, 2015
International Thermal Spray Conference & Exposition
Long Beach Convention & Entertainment Center • Long Beach, CA
http://www.asminternational.org/web/itsc-2015/home

MAY 11–14, 2015
AEROMAT 2015
Long Beach Convention & Entertainment Center
Long Beach, CA
http://www.asminternational.org/web/itsc-2015/home

MAY 12-14, 2015
EASTEC 2015
Eastern States Exposition Center
West Springfield, MA
http://easteconline.com

MAY 18, 2015
Industrial Diamond Association of America Annual Meeting
Marriott Indianapolis Downtown
Indianapolis, Indiana USA
www.superabrasives.org

May 19 & 20, 2015
Indianapolis Marriott Downtown
350 West Maryland Street
Indianapolis, Indiana USA
www.intertechconference.com

JUNE 17-18, 2015
Amerimold 2015
Donald E. Stephens Center
Rosemont, IL, USA
http://www.amerimoldexpo.com

SEPTEMBER 2015
Industrial Diamond Association of America
Superabrasive Materials, Principles & Applications
Education Course –
Watch for details at:
www.superabrasiveseducation.com

NOVEMBER 2-4, 2015
Unified Abrasives Manufacturers' Association Fall Business Meeting
Newport Marriott • Newport, RI
www.uama.org

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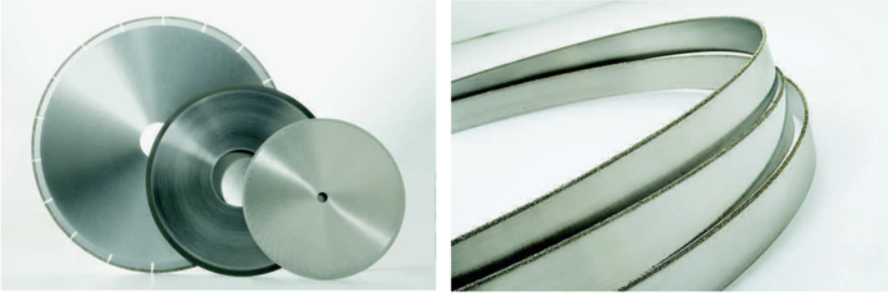

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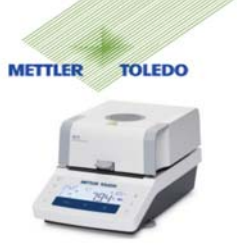
Announcements & PRODUCTS



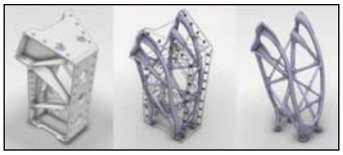
METTLER TOLEDO'S NEWLY LAUNCHED HE73 HALOGEN MOISTURE ANALYZER MAKES MOISTURE ANALYSIS ACCESSIBLE TO ALL

March 2015 – As a critical part of many quality control procedures, METTLER TOLEDO's HE73 halogen moisture analyzer provides reliable moisture results in just a few minutes, giving companies maximum control over their manufacturing processes and optimum product quality. The HE73 has been designed for simplicity to make it easy for even untrained operators to use. The HE73 provides graphical guidance on the instrument display so operators can clearly see each of the three steps in the process: 1. Tare the empty weighing pan, 2. Add the sample and spread evenly, and 3. Press start. The final moisture content of the sample is displayed on the screen after just a few minutes. The moisture content result indicates if the product meets the defined process tolerances and enables any necessary adjustments to the manufacturing process to be made immediately, saving time and avoiding the necessity to discard out-of-specification products.

CONCEPT MACHINE TOOL SALES, INC. (CMT) HAS BEEN APPOINTED DISTRIBUTOR OF FIVES MACHINING SYSTEMS FOR WISCONSIN, MINNESOTA, NORTH DAKOTA, SOUTH DAKOTA, IOWA AND NEBRASKA

FOND DU LAC, WI, March 2015 – The full-service machine tool distributor, with offices in Minneapolis, MN and Delafield, WI, will distribute all products for Fives Cincinnati, Fives Giddings & Lewis and Fives Liné Machines in the six-state area. "We're excited about the opportunity to represent the products of these leading North American machine tool builders," said Bob Jurack, Concept General Manager. Fives designs and builds machine tools, process equipment and production lines for a variety of industries including aerospace, automotive, heavy equipment, oil and gas and energy. Fives metal cutting solutions include machine tools for cutting, turning and milling very large parts and tough-to-cut materials, while its composites processing equipment enables production of a variety of complex parts.

SENVOL, A COMPANY THAT DOES ANALYTICS EXCLUSIVELY FOR THE 3D PRINTING INDUSTRY ANNOUNCES 3D PRINTING INNOVATIONS



Airbus Defence and Space say more than 50 Eurostar satellites have been built and delivered since the launch of the first iteration, the Inmarsat-2 F1, which was in service for more than 20 years. The latest version, Eurostar E3000, can be loaded with 100 transponders, a number of antennas, and payload power ranging from 4 kW and up to 14 kW. Now Airbus Defence and Space in the UK says they're producing their first space-qualified 3D printed components from aluminum. The parts are the result of a two-year-long research and development program undertaken by the UK National Space Technology Programme via Innovate UK and the UK Space Agency. The UK team say these new 3D printed components cannot be manufactured using conventional manufacturing methods, and they include a structural bracket built using aerospace-grade aluminum alloy. The Airbus Group has started using ALM (additive layering manufacturing) for tooling and prototyping parts for test flights and for parts that will fly on commercial aircraft. The company says components produced with ALM are beginning to appear on the A350 XWB the jetliners in the A300 and A310 line. The first flight-qualified ALM part – a titanium alloy bracket from Airbus Defence and Space – is already flying aboard the Atlantic Bird 7 telecom satellite, and the Unmanned Aerial Vehicle "Atlante" features a 3D printed air intake. ***For more information visit: http://3dprint.com/category/3d-printing***

SCHÜTTE (JACKSON, MICHIGAN) TODAY ANNOUNCES THE INTRODUCTION OF ITS NEW 325LINEAR MACHINE

A 5-axis CNC grinder with extended x- and y-axis movement plus two auxiliary slides for workpiece clamping and improved grinding wheel guidance over the entire machining envelope. Micro tools, gun drills, hob cutters and complex geometries can be accommodated on this new machine, which operates in the range of 2500-4000 rpm, typically. The additional second auxiliary slide enables the 325linear to utilize tool guidance, part support, tailstock or workpiece pallets in operation. This new Schütte machine further expands the user's automation possibilities, as it also offers significant advancements in wheel change and robotic workpiece handling. With the automated collet changer on the machine, workpieces with different diameters can be clamped with high concentricity in the unmanned loader station. ***For an operational video on this machine, please visit: http://youtu.be/2gTHHCZHMic***

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Abstract & Paper Deadlines, Requirements & Guidelines

"All papers must adhere to the following guidelines for final acceptance as an oral presentation. The deadlines listed are critical due to the fact that all presentations and papers (Proceedings) will be loaded onto thumb drives and handed out to attendees of INTERTECH 2015"

1. ABSTRACTS ARE STILL BEING ACCEPTED

- a. Abstracts can be submitted on-line at www.intertechconference.com or submitted by email to: tkane-ida@insight.rr.com. They may also be mailed to INTERTECH 2015 Abstract - P.O. Box 29460 - Columbus, Ohio 43229 USA
- b. All abstracts will be assigned a conference reference number (1501-1599) and the submitter will be notified by email of receipt. All further correspondence must reference this assigned number.
- c. Abstracts will be reviewed by the INTERTECH Technical Advisory Committee (TAC)
- d. After review each submitter will receive one of four notifications:
  - i. Paper accepted for final presentation
  - ii. Paper will be accepted with recommendations
  - iii. Paper will only be considered if a new abstract is submitted with changes by review committee included
  - iv. Paper refused as inappropriate for INTERTECH – Submitter may choose to submit a new abstract

2. AFTER ABSTRACT ACCEPTED & APPROVED, THE FIRST FULL WRITTEN DRAFT OF PAPER IN MICROSOFT WORD MUST BE RECEIVED BY THE REVIEW COMMITTEE PRIOR TO MARCH 1, 2015. They may be emailed to INTERTECH 2015 Paper # (include reference #) to: tkane-ida@insight.rr.com. They may also be mailed to INTERTECH 2015 Paper # (include reference #) - P.O. Box 29460 - Columbus, Ohio 43229 USA. If Paper is being mailed on a CD they can be mailed to INTERTECH 2015 c/o Kane Global Communications, 6081 Central Park Drive, Columbus Ohio 43231 USA

3. If paper is declined for content or appropriateness for this conference, suggestions or recommendations by the committee for paper clarification will be sent back to the author at that time.

4. FINAL DRAFT (IN WORD) ALONG WITH YOUR POWERPOINT PRESENTATION WITH GRAPHICS AND PHOTOS MUST BE RECEIVED ON A CD BY MARCH 1, 2015 AT: INTERTECH 2015 CONFERENCE, 6081 CENTRAL PARK DRIVE, COLUMBUS, OHIO, 43231 USA. If the files are small enough, they may be emailed to INTERTECH 2015 Paper # (include reference #) to: tkane-ida@insight.rr.com.

5. POWERPOINT PRESENTATION MUST ADHERE TO THE TEMPLATE FORMAT LISTED UNDER "PRESENTATION TEMPLATE" AT THE INTERTECH WEBSITE LINK

6. Make sure your name, title, any contributors or coauthors as well as the INTERTECH 2015 reference number are included on the outside of the CD. This will be loaded into the Conference computers for projection. You are also advised to bring a backup CD or flash drive in case there is a problem with the one you mail.

7. Multiple contributors may be listed on the paper, but the first person listed will be considered the presenter for the INTERTECH 2015. Additional contributors for the paper will be listed in the conference program as coauthors.

8. English will be the language for all materials and oral presentation. Papers need to be written in English and we ask that a person with an excellent command of English, or English as their first language review the paper prior to submission for accuracy of terminology.

9. Time allotted for each paper will be approximately 40 minutes, 30 minutes for the formal presentation and 10 minutes for questions.

10. Please write paper using the third person to avoid commercialization and improve the credibility of the paper.

11. It is preferred that instead of "I found", "we studied", "my results", "our company developed a process" and similar terminology, the paper be written and stated in terms of "it was found", "studies were made", "the results were" or "a process was developed".

12. Advantages of product use or development in terms of productivity, savings or performance *must* be shown in all papers. Projected or proven examples should be included.

13. Graphics should be clear and easy to read from the back of a large room, please use bullets and avoid too much text. When designing your slides it is better to have more slides with less text in a larger font, instead of fewer slides with more text in a small font. If you cannot read the text clearly on a computer screen in "normal slide view" the audience will not be able to read it either.

14. Photographs of applications, products, parts, etc. MUST be included wherever possible. *Due to the many languages spoken by attendees, photos and graphics add clarification and understanding to the presentation.* This helps the audience understand many of descriptions, products and applications.

15. Trade names must not be used for any products featured in the presentation and no company reference (except in terms of end use, such as General Motors, Boeing, Ford and the like) should be used in the presentation.

16. Company logos, titles, etc. of presenters and their company may only be on the introductory slide/graphic and not used through the presentation or on every slide. This makes the paper look too commercial. If you are speaking about a company machine in a given operation, the photos should not show logos or company names.

17. Text must be composed in Microsoft Word with indication of where graphics will be used. Graphics, photos and charts for presentation support must be created and submitted in Microsoft PowerPoint. This is being done to keep uniformity of the presentations and to allow for preloading of all presentations into the conference computer systems. Conference computers will be PCs loaded with Microsoft Office and will not open other programs.

18. **Overhead projectors or 35 mm slide projectors *will not be provided*. All presentation graphics/slides and photos will be shown on computer projection systems. *If a presenter require overheads, or another form of graphic support, they will need to submit a request in writing to the Program Review committee c/o Industrial Diamond Headquarters P.O. Box 29460, Columbus, Ohio 43229 by April 1, 2015 or email: tkane-ida@insight.rr.com***

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Please contact Terry Kane, INTERTECH 2015 Conference Chairman - Telephone: 614-797- 2265 Email: tkane-ida@insight.rr.com with any questions or points for clarification.

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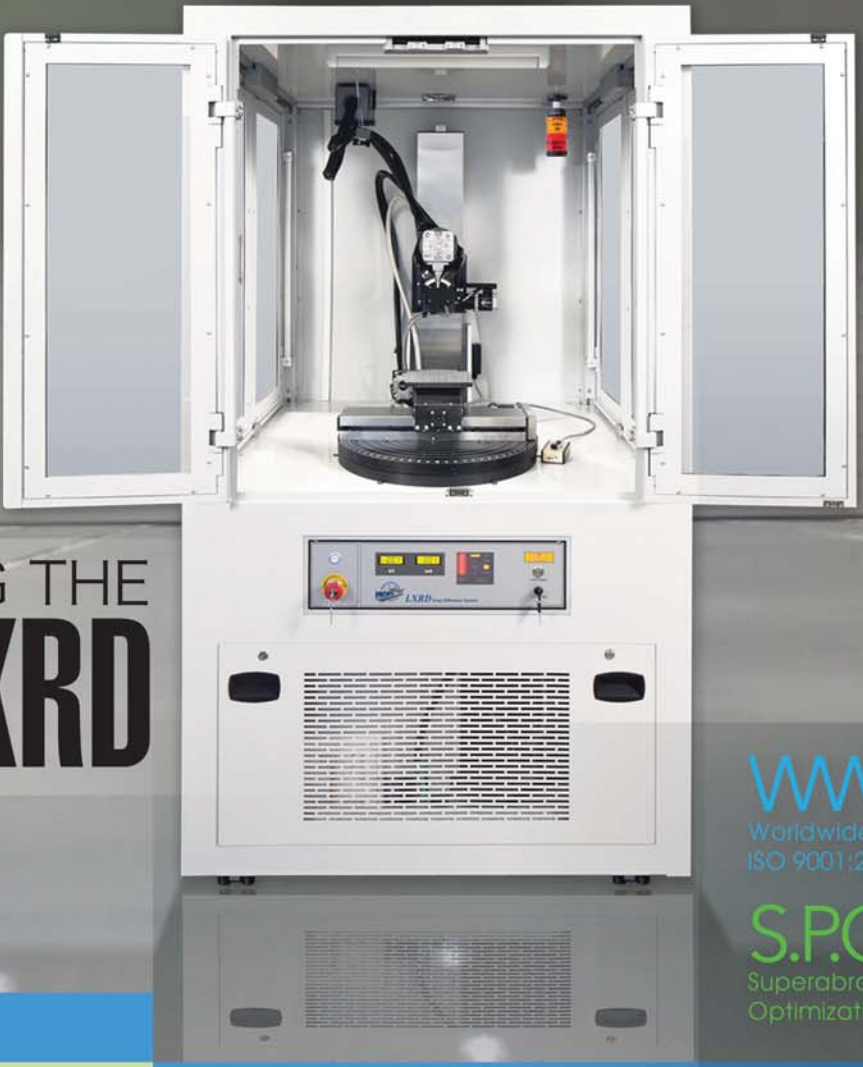

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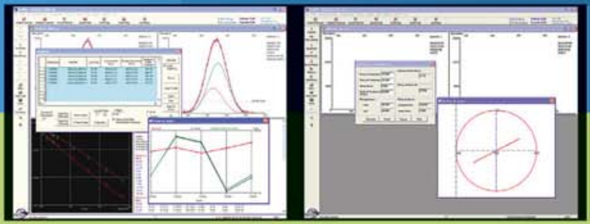
Key Features of the Proto LXRD

Manufactured by the leading name in residual stress mapping, the Proto LXRD uses sophisticated x-ray technology and enhanced detection software to accurately create a detailed map of residual stress. We can measure residual stress on sample parts that we grind to reveal any subsurface damage or burn. The Proto LXRD leads the way in residual stress measurements with:

- Robust, heavy-duty design Primed for industrial use
- Fast, durable X-ray detectors that do not deteriorate over time
- Unique modular goniometer system (patent pending)
- Advanced onboard chiller / heater to maintain optimum performance of X-ray tubes
- Wide range of X-ray apertures to enable measurement of odd-shaped parts
- The latest XRDWin 2.0 software for unparalleled data collection and accurate residual stress analysis

Leading the way in Quality Control

Through utilization of enhanced quality control instruments such as the Proto LXRD, Worldwide Superabrasives can further its commitment to excellent testing standards. We are proud to be an innovator in implementing the strictest and most advanced quality control measures to reassure our customers of our integrity and to ensure superior testing every time.



Worldwide Superabrasives and **SPOC** has continued its commitment and passion for quality control, utilizing state of the art residual stress measurement capabilities with the acquisition of a leading residual stress mapping machine - the Proto LXRD.

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